ABSTRACT OF THE DISCLOSURE

An integrated circuit including operational circuitry operable in response to at least one control signal (e.g., an enable signal) asserted to an external node from an external source, and test circuitry coupled to the external node and the operational circuitry. In response to data (preferably including a digital key) asserted to the external node from an external source, the test circuitry enters a test mode in which it tests, configures, or reconfigures the operational circuitry. The test circuitry also asserts to the operational circuitry each control signal received at the external node (or an amplified or translated version thereof). Preferably, the test circuitry can assert test data from within the chip to the external node for transmission to external circuitry, the test circuitry includes logic circuitry coupled to the external node for receiving an input signal from an external source, and the logic circuitry can extract the test data (and preferably also a clock) from the input signal. Other aspects of the invention include test circuitry for use in a circuit having an access node and methods for performing on-chip testing, configuration, and control of operational circuitry within a chip in response to test data and at least one control signal asserted from an external source to an external node. Preferably, the test circuitry includes safety features for preventing accidental test mode operation in response to an input signal at the external node, such as circuitry that disables test mode operation unless test data are asserted to the external node with at least a minimum frequency, and lock circuitry that triggers test mode operation only in response to a valid digital key. Preferably, the test circuitry is configured to extract test data, a clock, and a latch signal from an amplitude-modulated input signal at the external node. Preferably, when the test circuitry is neither in the test mode nor a state in which it analyzes test data to identify a digital key, the test circuitry automatically enters a state of reduced power consumption.